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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-16. (Canceled)

1 17. (Previously presented): A method for processing data in a storage system 2 coupled to a host computer via a network, the method comprising: 3 producing snapshots of a data volume, including a first snapshot of at least a 4 portion of the data volume for a first point in time and a second snapshot of the portion of the 5 data volume for a second point in time, wherein the first point in time is represented by first 6 information that specifies a time when the first snapshot is taken and the second point in time is 7 represented by second information that specifies a time when the second snapshot is taken; 8 detecting write requests directed to the data volume and in response thereto 9 producing journal entries corresponding to the write requests, wherein at least one of the journal 10 entries can be applied to one of the snapshots to recreate data of the portion of the data volume, 11 wherein the journal entries includes write data associated with the write requests and time 12 ordering information that specifies order of the write requests made to the data volume; 13 detecting a marker request and in response thereto producing a marker journal 14 entry that specifies a third point in time between the first point in time and the second point in 15 time, wherein the journal entries and the marker journal entry are ordered according to a time 16 when one of the write requests is conducted and the third point in time; 17 detecting a request to retrieve the marker journal entry that specifies the third 18 point in time between the first point in time and the second point in time and in response thereto 19 accessing the marker journal entry; and 20 detecting a request to perform a recovery operation, the request including the third 21 point in time associated with the marker journal entry, and in response thereto:

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22 selecting one of the first or second snapshot based on the first information, 23 the second information, and the third point in time; and 24 selecting at least one of the journal entries corresponding to the write 25 operation conducted between the third point in time and one of the first or second point in 26 time associated with the selected snapshot based on one of the first or second information 27 associated with the selected snapshot, the time ordering information and the third point in 28 time to recover data of the portion of the data volume at the third point in time by using 29 the selected snapshot and the selected at least one of the journal entries.

18-30. (Canceled)

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31. (Currently amended): A storage system coupled to a host computer via a network comprising:

a data volume storing write data from the host computer;

a snapshot storing area storing a first snapshot of at least a portion of the data volume for a first point in time, the first point in time represented by first information that specifies a time when the first snapshot is taken, the snapshot storing area further storing a second snapshot of the portion of the data volume for a second point in time, the second point in time represented by second information that specifies a time when the second snapshot is taken;

a journal storing area storing journal entries, wherein the journal entries comprises the write data and time ordering information that specifies order of write operations made to the data volume, and storing marker information that specifies a third point in time between the first point in time and the second point in time; and

a storage controller configured to perform write operations according to write requests received from the host computer, to manage snapshot operations to store a plurality of snapshots including the first snapshot and the second snapshot, and to manage journal operations to record the journal entries and record the marker information based on an instruction from the host computer;

wherein the first information, the second information, and the maker information are associated with the time ordering information to specify time ordering among a time when

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20	one of the write operations is conducted, the first point in time, the second point in time, and the
21	third point in time,
22	wherein the storage controller releases at least one of the stored journal entries,
23	wherein, in response to receiving a data recovery request that includes the marker
24	information between the first point in time and the second point in time, the storage controller
25	determines if at least one of the journal entries is stored in the journal storing area to perform the
26	data recovery request,
27	wherein, in response to the data recovery request, the storage controller selects
28	one of either the first or second snapshot based on the first information, the second information,
29	and the marker information, and selects at least one of the journal entries corresponding to the
30	write operation conducted between the third point in time and one of the first or second point in
31	time associated with the selected snapshot, based on one of[[:]] the first or second information
32	associated with the selected snapshot, the time ordering information and the marker information
33	to recover data of the portion of the data volume at the third point in time by using
34	the selected snapshot and the selected at least one of the journal entries.

- 1 32. (Previously presented): The storage system of claim 31, wherein the time ordering information includes time information and/or sequence number.
- 1 33. (Previously presented): The storage system of claim 32, wherein the first 2 and second information include time information and/or sequence number.
- 1 34. (Previously presented): The storage system of claim 33, wherein the 2 marker information include time information and/or sequence number.
- 1 35. (Previously presented): The storage system of claim 31, wherein the write data stored in the journal storing area are stored in chronological order.
- 1 36. (Previously presented): The storage system of claim 31, wherein the 2 snapshot storing area and/or the journal storing area are configured with storage volumes.

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1	37.		The storage system of claim 31, wherein at least		
2	one of the journal entries are stored in the journal storing area before storing one of the plurality				
3	of snapshots in the snapshot storing area.				
1	38.	O 1			
•	•		The storage system of claim 31, wherein the		
2	journal operations are	e started prior to starting t	he snapshot operations.		
1	39.	(Previously presented):	The storage system of claim 31, wherein the		
2	selected snapshot is c	losest in time to the third	·		
	•		Four El Mile.		
1	40.	(Previously presented):	The storage system of claim 31, wherein the		
2	selected snapshot is prior in time to the third point in time.				
1	41.		The storage system of claim 31, wherein when		
2	receiving a data recovery request with target time between the first point in time and the second				
3	point in time, the stor	age controller selects one	of the first or second snapshot based on the first		
4	information, the secon	nd information, and the ta	arget time, and selects at least one of the journal		
5	entries corresponding	to the write operation co	nducted between the target time and one of the		
6	first or second point i	n time associated with the	e selected snapshot based on one of the first or		
7	second information associated with the selected snapshot, the time ordering information and the				
8	target time to recover data of the portion of the data volume at the target time by using the				
9	selected snapshot and the selected at least one of the journal entries.				
	•				
1	42.	(Previously presented):	A storage system coupled to a host computer via		
2	a network comprising	;			
3	a data	volume storing write date	from the host computer;		
4	a snapshot storing area storing a first snapshot of at least a portion of the data				
5	volume for a first point in time, the first point in time represented by first information that				
6	specifies a time when the first snapshot is taken, the snapshot storing area further storing a				

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7	second snapshot of the portion of the data volume for a second point in time, the second point in			
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	time represented by second information that specifies a time when the second snapshot is taken;			
9	a journal storing area storing journal entries and marker information, wherein the			
10	journal entries comprises the write data and sequence numbers that specifies write ordering to th			
11	data volume; and			
12	a storage controller conducting write operations according to write requests from			
13	the host computer, managing snapshot operations to store a plurality of snapshots including the			
14	first snapshot and the second snapshot, and managing journal operations to record the journal			
15	entries and record the marker information based on an instruction from the host computer;			
16	wherein the sequence number is associated with the first information, the second			
17	information, and the marker information;			
18	wherein the storage controller releases at least one of the stored journal entries,			
19	wherein when receiving a data recovery request that includes the marker			
20	information between the first point in time and the second point in time, the storage controller			
21	determines if at least one of the journal entries is stored in the journal storing area to perform the			
22	data recovery request, selects one of the first or second snapshot based on the first information,			
23	the second information and the marker information to copy the selected snapshot to a recovery			
24	volume, and selects at least one of the journal entries based on one of the first or second			
25	information associated with the selected snapshot, the sequence number and the marker			
26	information to recover data of the portion of the data volume by applying the selected journal			
27	entries to the copied snapshot in the recovery volume.			
1	43. (Previously presented): The storage system of claim 42, wherein when			
2	receiving a data recovery request with a first target time between the first point in time and the			

second point in time, the storage controller selects one of the first or second snapshot based on

snapshot to a recovery volume, and selects at least one of the journal entries based on one of the

first or second information associated with the selected snapshot, the sequence number and the

the first information, the second information and the first target time to copy the selected

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- first target time to recover data of the portion of the data volume at the first target time by applying the selected journal entries to the copied snapshot in the recovery volume.
 - 44. (Previously presented): The storage system of claim 42, wherein when receiving a data recovery request with a second target time between the first point in time and the second point in time, the storage controller selects one of the first or second snapshot based on the first information, the second information and the second target time to copy the selected snapshot to a recovery volume, and selects at least one of the journal entries based on one of the first or second information associated with the selected snapshot, the sequence number and the second target time to recover data of the portion of the data volume at the second target time by applying the selected journal entries to the selected snapshot in the recovery volume.
- 1 45. (Previously presented): The storage system of claim 42, wherein the write 2 data stored in the journal storing area are stored in chronological order.
 - 46. (Previously presented): The storage system of claim 42, wherein the snapshot storing area and/or the journal storing area are configured with storage volumes.